

Karachi Institute of Economics & Technology

College of Computing & Information Sciences



Numerical Computing & Analysis

Assignment

Class ID :	Student ID : 7791
Student Name : Muhammad Umair	



```
#Muhammad_Umair,7791
```

```
def proterm(i, value, x):
```

```
    pro = 1;
```

```
    for j in range(i):
```

```
        pro = pro * (value - x[j]);
```

```
    return pro;
```

```
def dividedDiffTable(x, y, n):
```

```
    for i in range(1, n):
```

```
        for j in range(n - i):
```

```
             $y[j][i] = ((y[j][i - 1] - y[j + 1][i - 1]) / (x[j] - x[i + j]));$ 
```

```
    return y;
```

```
def applyFormula(value, x, y, n):
```

```
    sum = y[0][0];
```

```
    for i in range(1, n):
```

```
        sum = sum + (proterm(i, value, x) * y[0][i]);
```

```
    return sum;
```

```
def printDiffTable(y, n):
```

```
for i in range(n):
    for j in range(n - i):
        print(round(y[i][j], 4), "\t", end = " ");

    print("");

n = 5;
y = [[0 for i in range(10)] for j in range(10)];
x = [ 0, 10, 15, 20,22.5];
y[0][0] = 0;
y[1][0] = 227.04;
y[2][0] = 362.78;
y[3][0] = 517.35;
y[4][0] = 602.97;

y=dividedDiffTable(x, y, n);
printDiffTable(y, n);
value = 16;
print("\nValue at", value, "is", round(applyFormula(value, x, y, n), 2))
```

0	22.704	0.2963	0.004	0.0001
227.04	27.148	0.3766	0.0054	
362.78	30.914	0.4445		
517.35	34.248			
602.97				

Value at 16 is 392.07